

Title: Smoke-free (Private Vehicles) Regulations 2014 IA No: 3073 Lead department or agency: Department of Health Other departments or agencies:	Impact Assessment (IA)		
	Date: 12/11/2014		
	Stage: Final		
	Source of intervention: Domestic		
	Type of measure: Secondary legislation		
Contact for enquiries: DH Tobacco Programme			

Summary: Intervention and Options	RPC Opinion: Not applicable
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Cost of Preferred (or more likely) Option				
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Measure qualifies as Two-Out?	
£32.7m	£0	N/A	No	N/A

What is the problem under consideration? Why is Government intervention necessary?

Tobacco use remains a significant challenge to public health and exposure to secondhand smoke (SHS) is hazardous to health, especially for children because they breathe more rapidly and inhale more pollutants than adults. In 2012, the Smoking, Drinking and Drug Use Among Young People in England survey (SDDS) results reported that 26% of 11-15 year olds are exposed to SHS in their family's car. The Department of Health has worked to encourage positive behaviour change among parents and other smokers through social marketing campaigns. In February 2014, Parliament voted in favour of introducing legislation to make private vehicles carrying children smokefree. Government intervention is believed to be required to prevent SHS from adversely affecting the health of children in private vehicles, where the levels of SHS can be significantly more concentrated. Intervention is further required on behalf of children as they cannot exert their choice to leave an SHS-exposed vehicle unlike adult passengers.

What are the policy objectives and the intended effects?

To prevent smoking in private vehicles carrying children to protect them from the harms of SHS, which is expected to reduce incidence of illness and reduce burdens on the NHS.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Option 1: Do nothing (this option includes the continuation of the current social marketing campaign)
Option 2: Extend the current smokefree legislation to cover private vehicles and create two offences – smoking in a private vehicle with a person under 18 present and failure to prevent smoking in a private vehicle with a person under 18 present. Public Health England will continue its work to increase awareness of the harms associated with SHS and encourage behaviour change.

Will the policy be reviewed? If applicable, set review date: Review after 5 years					
Does implementation go beyond minimum EU requirements?			N/A		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.		Micro No	< 20 No	Small No	Medium No
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)		Traded:		Non-traded:	

I have read the Impact Assessment and I am satisfied that given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:  Date: 09.12.2014

Summary: Analysis & Evidence

Policy Option 1

Description: Do nothing

FULL ECONOMIC ASSESSMENT

Price Base 2014	PV Base 2015	Time Period Years	Net Benefit (Present Value (PV)) (£m)		
			Low: Optional	High: Optional	Best Estimate: 0

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate	0	0	0

Description and scale of key monetised costs by 'main affected groups'

This is essentially a "do nothing" option and hence these are defined to be 0

Other key non-monetised costs by 'main affected groups'

These are defined to be 0

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate	0	0	0

Description and scale of key monetised benefits by 'main affected groups'

These are defined to be 0

Other key non-monetised benefits by 'main affected groups'

These are defined to be 0

Key assumptions/sensitivities/risks

These are defined to be 0

Discount rate (%)

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 0	Benefits: 0	Net: 0		

Summary: Analysis & Evidence

Policy Option 2

Description: Extend the current smokefree legislation to cover private vehicles

FULL ECONOMIC ASSESSMENT

Price Base Year 2014	PV Base Year 2015	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: Optional	High: Optional	Best Estimate: £32.7m

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate			£0.8m

Description and scale of key monetised costs by 'main affected groups'

Expected costs incurred by the justice system from court proceedings are £352,000. Police administrative costs are estimated at £416,000 based on the time taken to issue FPNs and back office costs.

Other key non-monetised costs by 'main affected groups'

We anticipate minimal, if any, opportunity costs to society due to police work diverted from other law enforcement activities. Loss of choice and the forced change in consumption profile to smokers is discussed under consumer surplus. Offender fines total £860,000 (but are not included in the NPV as offender costs are not considered in Impact Assessments).

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional	Optional	Optional
High	Optional	Optional	Optional
Best Estimate			£33.5m

Description and scale of key monetised benefits by 'main affected groups'

Reduced demand for smoking-related NHS treatments should enable treatment of other patients, securing an additional 540 QALYs, valued at £60,000 each (in total, £32.6m). MOJ to benefit from increased revenue due to driver fines worth an estimated £860,000.

Other key non-monetised benefits by 'main affected groups'

Improvements in quality of life for children as a result of fewer disease cases. Other benefits include fewer driving accidents, future productivity gains and utility gains to children who are no longer exposed to secondhand smoke in vehicles.

Key assumptions/sensitivities/risks

Discount rate (%)

3½

Assuming the Royal College of Physicians (RCP) report on disease case estimates are a fair approximation, and that 5% are attributable to SHS in cars.

Assumption that the utility gains to children from not being exposed to SHS in cars offsets the consumer surplus lost to smokers.

Potential risk that smokers increase their smoking levels at home around children.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:	In scope of OIOO?	Measure qualifies as
Costs: Benefits: Net: 0	No	NA/

Evidence Base

What is the problem under consideration?

1. Exposure to secondhand smoke (SHS) is hazardous to health. Today, many children in England report being exposed to secondhand smoke in private vehicles, including the family car (explained in more detail under 'Evidence' below).
2. In 2012, the Smoking, Drinking and Drug Use Among Young People in England survey (SDDS) results reported that 26% of 11-15 year olds are exposed to SHS in their family's car and 30% in someone else's car.¹ Evidence shows secondhand smoke is a real and substantial threat to child health, causing a variety of adverse health effects including increased susceptibility to lower respiratory tract infections such as pneumonia and bronchitis, worsening of asthma, middle ear disease, decreased lung function, and sudden infant death syndrome (see 'Evidence' below).
3. Additionally, children are more vulnerable to SHS exposure in vehicles. They breathe more rapidly and inhale more pollutants than adults.² Children are also less able to exert their choice to leave a private vehicle and/or request adults to stop smoking in a private vehicle compared to adults.
4. The consultation stage Impact Assessment (IA) for the prohibition of smoking in private vehicles and failing to prevent smoking in private vehicles appraised the impact of these regulations and was made available at the time that the consultation was launched.
5. This final IA contains the most up to date cost estimates and benefits associated with this policy which have been revised following the consultation. The costs have changed as we received more accurate estimates relating to the costs of police time.

Policy objectives

6. The Government will proceed with the introduction of regulations to end smoking in private vehicles carrying children in England.
7. The aims of these proposed regulations on smoking in private vehicles carrying children is to:
 - protect children from the health harms associated with exposure to secondhand smoke in private cars;
 - encourage action by smokers to protect children from secondhand smoke;
 - in time, lead to a reduction in health conditions in children caused by exposure to secondhand smoke.
8. A public consultation on these draft regulations was carried out between 15 July and 27 August 2014.
9. There were 201 responses to the consultation from members of the public; organisations; health and social care professionals and businesses. The responses spanned a broad spectrum of opinions, both for and against the policy, however all respondents recognised the need to protect children from the harms of secondhand tobacco smoke. The main concerns identified by respondents were
 - the age in which a person will be committing an offence, with some people wishing to include an exemption for those under the age of 18.
 - a review of the regulations 2 years from the coming into force date
 - the clarity of how the regulations will be enforced with regard to motorhomes

¹ Health and Social Care Information Centre. *Smoking, Drinking and Drug Use Among Young People in England, 2012*. Health and Social Care Information Centre, Leeds, (<http://www.hscic.gov.uk/searchcatalogue?productid=12096&q=title%3a%22smoking+drinking+and+drug+use%22&sort=Relevance&size=10&p=1#top>)

² Canadian Institute of Child Health. *Environmental hazards: Protecting children*. Canada 1997.

10. Having considered the consultation responses the Government intends to slightly extend the exemption that applies to motorhomes and include a duty to review the regulations.
11. A Government response to the consultation will be published in due course.

Evidence

Secondhand smoke (SHS)

12. Secondhand smoke is a serious health hazard, and there is no harm-free level of exposure. Every time someone breathes in secondhand smoke, they breathe in over 4,000 chemicals. Many are highly toxic. More than 50 are known to cause cancer. Scientific evidence also shows that ventilation does not eliminate the risks to health of secondhand smoke in enclosed places. The only way to provide effective protection is to prevent people breathing in secondhand smoke in the first place.³
13. In 2007, smokefree legislation was introduced in England and Wales to protect employees and the public from the harmful effects of secondhand smoke. That legislation did not extend to private vehicles.
14. SHS refers to the inhalation of other people's tobacco smoke. The dangers of exposure to SHS have been well documented in a range of epidemiological⁴ studies amongst the scientific community. Research suggests that there is no safe level of SHS exposure.⁵
15. The health hazards of exposure to SHS include an increase in the risk of the following diseases in adults:⁶
 - Heart disease
 - Lung cancer
 - Stroke and chronic obstructive pulmonary disease
16. In 2010, the Royal College of Physicians published a report titled *Passive Smoking and Children* that synthesised evidence and research on this issue. The RCP report found that children are particularly vulnerable to secondhand smoke exposure, and that relative to children whose parents are non-smokers, secondhand smoke exposure in children is typically around three times higher if the father smokes, over six times higher if the mother smokes and nearly nine times higher if both parents smoke. Children from socio-economically disadvantaged backgrounds are generally more heavily exposed to secondhand smoke than other children.⁷
17. A 1998 report of the Government's independent Scientific Committee on Tobacco and Health (SCOTH) concluded that smoking in the presence of children is a cause of serious respiratory illness and asthmatic attacks. In 1999, the World Health Organization (WHO) convened an international consultation on SHS and child health. Its conclusions were similar to those of the 1998 SCOTH report. The WHO found that SHS is a real and substantial threat to child health, causing a variety of adverse health effects including increased susceptibility to lower respiratory tract infections such as pneumonia and bronchitis, worsening of asthma, middle ear disease, decreased lung function, and sudden infant death syndrome.⁸
18. According to a 2004 report of SCOTH, a considerable number of studies have been published since 1998 confirming adverse effects of exposure to SHS on a variety of endpoints in children.

³ HM Government (2007). *Everything you need to prepare for the new smokefree law on 1 July 2007*. Smokefree England and Department of Health, London.

⁴ Epidemiology is the study of how often diseases occur in different groups of people and why (<http://www.bmj.com/about-bmj/resources-readers/publications/epidemiology-uninitiated/1-what-epidemiology>)

⁵ Environ Health Perspectives (Nov 2010) , *Smoking and secondhand smoke: Study Finds No Level of SHS Exposure Free of effects* <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2974716/>

⁶ All Party Parliamentary Group on Smoking and Health – Inquiry into smoking in private vehicles, 2011

⁷ Royal College of Physicians (2010). *Passive Smoking and Children*. RCP, London.

⁸ SCOTH (1998). *Report of the Scientific Committee on Tobacco and Health*. TSO, London.

These include impairment of lung function, respiratory symptoms in adolescents, wheezing, school absence due to respiratory illness, middle ear disease and recurrent ear infections.⁹ Evidence also suggests that secondhand smoke exposure can increase the risks of meningitis in children.

19. The 2010 RCP report suggested that exposure to secondhand smoke is a major cause of disease in children, and is responsible for over 300,000 UK general practice consultations and about 9,500 hospital admissions in the UK each year. The RCP emphasises in their report that this entire excess disease burden is avoidable.

Children exposed to SHS in cars

20. In 2012, 26% of 11-15 year olds reported being exposed to secondhand smoke in their family's car and 30% in someone else's car.¹ Research shows that smoking in vehicles can result in the accumulation of high levels of secondhand smoke, which can persist even when windows are open or the ventilation system is in use.¹⁰ Some public health groups have reported concern about the intensity of exposure to secondhand smoke in private vehicles, even if the duration of exposure may not lengthy. Research has shown that smoking just a single cigarette in a car generates high average levels of microscopic air pollutants, and where cars are ventilated (for example, air conditioning switched on or having the smoking driver hold the cigarette next to a half-open window), the average levels of air pollutants, while reduced, were still significantly high.¹¹
21. As noted above, the 2012 SDDS results reported that 26% of 11-15 year olds were exposed to SHS in their family's car and 30% in someone else's car. If we were to assume that the same exposure rate applied to all children aged under-18 in 2014, it would imply approximately 3 million children in England are exposed to SHS in their family car.¹²
22. We received responses during the consultation that suggested this estimate was high. Three other studies of note were brought to our attention:
- A New Zealand roadside study which found 0.13% of occupants smoking with children present;¹³
 - A study in Dublin where 0.04% of vehicles were observed with children present whilst the driver was smoking;¹⁴ and
 - A Tobacco Manufacturers' Association (TMA) survey where less than 10% of adult smokers smoke in their car where children are present.¹⁵
23. These offer only partial information on the number of children exposed to SHS in a vehicle. For example the New Zealand study is a count of all car journeys (whether children are present or not and whether the occupants are smoking or not) and so we would expect the incidence rate to be much lower. It also is only a snap shot, so will not cover the situation where the child has been (or will be) exposed to smoking during the journey, but not at the point of the survey site. This reasoning also holds for the Dublin study. It does not therefore offer any better data for how many children are exposed.
24. The TMA survey also fails to take account of the fact that more than one child could be exposed per journey (as would be expected if a family was travelling together) and also may suffer from respondents saying they didn't smoke when they actually did given changing social norms around exposing children to secondhand smoke.

⁹ SCOTH (2004). *Secondhand Smoke: Review of evidence since 1998*. Department of Health, London.

¹⁰ Semple, S. et al (2012). "Secondhand smoke in cars: assessing children's potential exposure during typical journey conditions" in *Tobacco Control*. 2012;21(6), pp.578-83.

¹¹ Sendzik, T. et al (2009). "An experimental investigation of tobacco smoke pollution in cars" in *Nicotine Tob Res*. 2009;11(6), pp.627-34.

¹² 2014 projected population for 0-17 year olds from ONS = 11.5m (<http://www.ons.gov.uk/ons/interactive/2012-npp/index.html>)

¹³ Patel V, Thomson G, Wilson N. Objective measurement of area differences in 'private' smoking behaviour: observing smoking in vehicles. *Tob Control*. 2011

¹⁴ <http://www.imj.ie/ViewArticleDetails.aspx?ArticleID=10612>.

¹⁵ http://www.the-tma.org.uk/~thetma/wp-content/uploads/2013/11/TMA_Smoking_in_Cars.pdf

25. We therefore concluded that we have used the best available evidence to estimate the number of children exposed.
26. The 2010 RCP on passive smoking and children estimates the impact of SHS exposure at home to children.⁷ After conducting a systematic review of existing studies, they estimate an increased risk in the following diseases for children:
- Lower respiratory infections (comprises bronchitis, bronchiolitis, pneumonia, and acute respiratory infection)
 - Wheeze
 - Asthma
 - Meningitis
 - Middle ear infection

Why is Government intervention necessary?

27. As explained above, exposure to SHS is hazardous to health, especially for children. We have long understood the risks and harms of SHS and know that inhaling SHS is an unavoidable consequence of being in a smoke-filled environment.¹⁶
28. As part of the Government's work on tobacco control, smokefree laws were introduced to protect people from the harms of SHS in public places, public transport and work vehicles. The laws came into force in England in 2007 and have proved to be effective and popular and compliance is virtually universal.¹⁷ Private vehicles are not covered by the original smokefree legislation.
29. The Tobacco Control Plan published in 2011 set out a comprehensive approach to tobacco control, including a commitment to raise awareness of the risks of exposing children to SHS. The Department of Health has also worked to encourage positive behaviour change among parents and other smokers through social marketing campaigns. Evaluation of the 2013 campaign shows that it was successful in changing both attitudes and behaviours, with 86% of those surveyed agreeing that SHS can cause significant harm to children and 37% saying that they took action (such as ordering a Smokefree Kit, stopping smoking or talking about it with friends and family) after seeing the adverts.¹⁸
30. In February 2014, Parliament voted in favour of the Children and Families Act 2014 that gave the Secretary of State powers to bring forward regulations to make private vehicles carrying children smokefree, which would build on the progress to date and speed up action to reduce the numbers of people who smoke in vehicles carrying children. The Department of Health has consulted on these draft regulations which would extend smokefree legislation in the Health Act 2006 to make it an offence to smoke in a private vehicle and an offence for a driver not to stop someone smoking, when someone under the age of 18 is present.
31. The case for Government intervention draws on arguments from economic theory. Theory suggests that the health hazards of exposure to SHS represent a market failure (where the choices and decisions made by individuals produce an outcome which is sub-optimal). Market failures provide additional justification for Government intervention. In this case, the market failure is caused by a "negative externality" – the actions of the adult smoking take place without full consideration for the effects on the child present in the vehicle. Unlike adults, children exposed to SHS in vehicles are unable to protect themselves from SHS, for example by exiting the vehicle. Nor is there any sensible way for an adult to compensate the child for the harm caused. Government intervention is therefore required to prevent the negative externality from adversely affecting the health of children exposed to SHS in vehicles.

¹⁶ U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health 2006;

¹⁷ Smokefree Legislation Compliance Data, <http://www.smokefreeengland.co.uk/files/83433-coi-smokefree-legislation-webtagged.pdf>

¹⁸ <http://resources.smokefree.nhs.uk/news/campaigns/smokefree-homes-cars-2013/>

32. In this case the intervention is focused on preventing children from being exposed to SHS specifically in a private vehicle. The rationale for intervention is made stronger for 2 primary reasons:
- Children are more vulnerable to SHS than adults (noted above)
 - Children are less able to leave a private vehicle and/or stop adults from smoking in a private vehicle compared to adults
33. Statistics show that 86% of children who are exposed to SHS in cars would like the smokers to stop, but 31% actually feel able to tell their parents to stop.¹⁹
34. The Department of Health and Public Health England are committed to continuing action to protect children from the serious health harms from exposure to secondhand smoke. We will continue our work to increase awareness of these harms and encourage positive behaviour change among smokers.

Summary and Conclusion of Smoking in Cars Impact Assessment

35. We estimate that approximately 3 million under-18 year olds in England are currently exposed to SHS in their family car. The regulations, if successful, are expected to reduce this by approximately 2.7 million children assuming a 95% compliance rate (based on previous vehicle legislation).
36. In the consultation stage IA we valued the benefits at £32.9m-£65.9m depending on assumptions used. These related to the opportunity for the NHS to treat other patients as a result of not having to spend money on secondhand smoke related illnesses. A key assumption was the attribution of SHS-related diseases to smoking in cars specifically. We estimated the total number of disease incidents in children that are caused by SHS using the Royal College of Physicians report.⁷ We then assumed 5%-10% of these incidents are due to SHS-exposure in cars. This was the IA's assumed central estimate, on which we invited views during the consultation.
37. We were not presented with further quantitative evidence around what proportion of SHS related diseases may be attributable to smoking in vehicles. Some responses said that the effects of SHS would be reduced by the opening of a window or use of air conditioning. We are not able to estimate from the data we have what proportion of exposure is in cars with no ventilation. We also do not know exactly how long a child spends in a vehicle compared to the home (where it may be expected they would also be exposed to SHS if adults smoke in the vehicle with the child present) – but that it is probably less than 10%. We are also unable to say, with certainty, how the average intensity of exposure compares across the home (and other non-vehicle places) and the average journey in a car where tobacco is smoked.
38. A central estimate that 5% of the SHS related diseases are attributable to smoking in vehicles seems reasonable, and therefore our central estimate of the discounted benefits over the next 10 years is £32.9m.
39. Other main unquantified benefits include reductions in morbidity to children associated with an improvement in quality of life. Future productivity gains from a healthier labour force and any impacts on uptake of smoking are considered under the section which considers the normalisation issue i.e. children seeing adults smoking and therefore making the behaviour seem normal.
40. Quantified costs are centred on the impact of enforcing these regulations and on the justice system. The fines paid by smokers found breaking the law are calculated but not included in the NPV as is standard from previous MoJ IAs. Estimated gross costs discounted over 10 years amount to £0.8m. Other costs discussed include police admin costs and consumer surplus losses

¹⁹ Protect children from second-hand smoke: Smoke-free Private Vehicles Amendment, Children and Families Bill: briefing for MPs, *British Lung Foundation*, (<http://www.google.co.uk/url?url=http://www.blf.org.uk/parliamentary-feb-14-pdf&rct=j&frm=1&q=&esrc=s&sa=U&ei=nFmgU8bNFK3Y7Aby4GwBA&ved=0CBkQFjAB&sig2=9nIVHNNdSsTzRi3LpkDfow&usg=AFQjCNF5F19mm7O0XAvFUS63uvPO9iB8ag>)

to smokers which are offset by utility gains to children. The focus of these regulations is not to impact on total smoking consumption. Consequently we anticipate no impacts on business.

Policy context/background

41. The Children and Families Act 2014 amends the Health Act 2006 to give the Secretary of State and Welsh Ministers regulation making powers to introduce a ban on smoking in private vehicles carrying children by extending the existing powers relating to smokefree legislation. This has previously have been exercised in relation to enclosed vehicles used by members of the public or for work.
42. The aim of these regulations is to protect children from the health harms associated with breathing in SHS. SHS is harmful to children and can cause illnesses such as bronchitis, middle ear disease and asthma. In 2012, 26% of 11-15 year olds reported being exposed to SHS in their family's car and 30% in someone else's car.
43. The Government will proceed with the introduction of regulations to end smoking in private vehicles carrying children in England. The purpose of this consultation was to seek views on draft regulations before they are made. Policy option 2 below reflects what we consider to be the most straightforward approach to regulation and enforcement to achieve the policy aims.
44. We will not measure the success of the proposed regulations by the number of enforcement actions that result, but will rather look how behaviour, attitudes and health outcomes change.

Policy Options

Option 1 – Do nothing in addition to the current marketing activity

45. This option would mean continuing with the social marketing campaign and encouraging behaviour change to further reduce levels of exposure of children to SHS but not bringing in legislation to make it an offence to smoke in a private vehicle in the presence of a child under the age of 18. The proportion of children exposed to SHS in cars may continue to fall but this is expected to be slow and may take many years before we reach anticipated high levels of compliance. This is, therefore, not our recommended option. Additionally, this would not achieve the Parliamentary objective of introducing a prohibition of smoking in a private vehicle carrying children with this option.

Option 2 – Make regulations to introduce an offence of smoking in a private vehicle carrying children and failing to prevent smoking in a private vehicle carrying children

46. We consulted on how to implement option 2, which is our recommended policy option and have drawn up draft regulations setting out how this could be enforced. Details of the main provisions in the regulations are set out at Annex 3 but in summary they create two offences – smoking in a private vehicle with under 18 present and failure to prevent smoking in a private vehicle with under 18 present. This mirrors the existing smokefree vehicles offences for public and work vehicles.
47. We think the most effective method of implementing regulations is with enforcement carried out by the police. The most appropriate method of penalty is in the form of a fixed penalty notice (FPN). We envisage the fixed penalty notice being at a level of £50 for both offences. If the decision by the enforcing authority is to prosecute and there is a summary conviction, the fine for smoking in a private vehicle is set at level 1 and for failing to prevent smoking in a private vehicle is level 4. The maximum amount of the fine at level 1 is due to increase from £200 to £800 and at level 4 from £2,500 to £10,000. The levels of penalty are consistent with the original smokefree legislation and while there is not an FPN available for failure to prevent smoking in a smokefree place, there will be one available for failure to prevent smoking in a private car carrying children.
48. We have discussed how this offence would be enforced by the police with Home Office officials and sought advice from the police. We envisage that enforcement will be taken forward by local police forces as part of their usual work on road safety. A police officer may stop a car if they

suspect an offence is being committed or as part of a planned operation targeting a particular issue such as the use of seatbelts. We envisage the police adding this offence to the list of offences they consider (which includes correct use of seat belts, child seats and use of mobile phones while driving) when they stop a car for any reason. We expect decisions about whether to issue warnings, fixed penalty notices or consider court action to be at the discretion of officers depending on the specifics of the individual situation.

49. We will continue to run a hard hitting social marketing campaign to continue to raise awareness among the general public of the health harms associated with SHS, in particular to children. The adverts will be adapted to inform people of the new offences.

50. Local authorities would also be able to enforce the proposed regulations, but would not have the powers to stop moving vehicles. We also see an important role for local authority regulatory officers, who enforce existing smokefree legislation, in working jointly with police on local enforcement activities, as well as continuing their efforts to build compliance for smokefree legislation. Local enforcement officers played a key role in the achievement of the very high levels of compliance seen with existing smokefree legislation.

Costs and benefits

Costs

51. The majority of quantified costs are for public services such as the police and justice system. The estimated FPNs charged on drivers or passengers who smoke in cars carrying children are also classified as a gain to the MOJ/public sector as extra revenue.

Police

Costs enforcing new laws

52. It is envisaged that the police will incorporate smoking-in-private vehicles checks as part of their usual work on road safety. This is based on discussions held with Home Office and the police. We, therefore, assume no direct financial costs are incurred by the police for monitoring against the new laws. No further evidence was presented during consultation.

Costs issuing Fixed Penalty Notices

53. The opportunity costs of a policy reflect the benefits foregone in using the resources required for enforcement of the new laws. In other words, time and resource that police officers could have spent doing other police work which would benefit society, instead of enforcing these particular regulations.

54. The magnitude of this cost will depend on the time taken by police officers to enforce the laws and any other resources used. This includes administrative burdens, such as the cost of staff having to process any additional fixed penalty notices. We did not quantify this cost at consultation stage as any estimate would have been speculative.

55. We have been made aware of the Impact Assessment looking at the introduction of careless driving offences in 2013²⁰ which it has assumed that the issuing of a fixed penalty notice would consume 30 minutes of front line policing time. We have tested this assumption with the Home Office who confirmed the estimate is the best available. They also suggested that the opportunity cost of an hour of an officer's time (sergeant and below) is £36.51, and therefore our opportunity cost estimate of police time is £18.26 per FPN issued. In addition the same IA suggested a £6 admin cost per FPN.

²⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/204616/impact-assessment-careless-driving.pdf

56. The total costs of issuing FPNs will therefore depend on the number of fixed penalty notices the police issue. We estimate an average of around 2,100 FPNs to be issued every year for the new offences, with a small downward trend due to the continuation of current reduction in adult smoking prevalence. The basis for this estimate can be found in Annexes 1 and 2. In our cost estimates we assume that a 95% of drivers will comply with the regulations as soon as they come into effect (based on previous vehicle legislation).²¹

Training

57. Advice from the police suggests that any training costs will be minimal. This is because existing FPN forms will be used and the issuing process will not change. Specific training will be needed to raise awareness of the new regulations, but this should not be lengthy and it is anticipated that it will be delivered as part of a virtual IT-based learning update for police officers. These costs have not been quantified but we assume they are not significant and are immaterial compared to the impacts modelled.

Total Police Costs

58. For the consultation IA, we considered the costs incurred per FPN issued by the police. We assumed for simplicity that each FPN would cost the police £50 (equal to the fine). This totalled around £860k discounted at 3.5% over 10 years.

59. Given the new information on police time and the unit costs of front line policing we are therefore revising our estimate to £24.26 per FPN issued, which equates to £416k discounted over ten years.

Justice system

60. There will be an impact on the justice system if and when cases are referred to the courts. For this offence, court proceedings may occur if:

- i. smokers dispute and do not accept an FPN issued to them they can take the matter to court
- ii. an enforcement body decides to refer an alleged offence directly to court to be dealt with.
- iii. FPNs issued are not paid within the allowed time and are referred to the courts

61. Cost estimates per case were provided by the Ministry of Justice and are set out in Annex 4. These are provisionally estimated at £500 per case²² made up of costs to the Crown Prosecution Service (CPS) and Her Majesty's Courts and Tribunal Service (HMCTS). We provisionally assumed in the consultation stage IA that 4% of FPN issues lead to court appearances. We take this rate from the number of court hearings that took place for individuals smoking in a smokefree area relative to the number of FPNs issued.¹⁷ We invited any further evidence during consultation. Summing up and discounting over the ten year period 2015-2024 gave an estimated cost to the justice system of £350,000.

62. No further evidence was received on this point during consultation, therefore we retain our best estimate as calculated in the consultation stage IA. Work will continue with MoJ analysts to monitor, test and confirm the volumes of FPNs issued and resulting court appearances.

63. For a full list of assumptions and risks around these cost estimates, please refer to Annex 4.

Smokers - FPN fines

64. We estimate about 2,100 FPNs to be issued every year for the new offences adjusted for population numbers and smoking prevalence rates. Assuming that each fine will be paid at £50 each, this sums up to £860,000 discounted at 3.5% over 10 years. This is a cost to those

²¹ See Annex B

²² All costs rounded to the nearest £100 and are in 2013/14 prices.

smokers who do not comply with the regulations. The recovery of driver fines will be managed by the Ministry of Justice (MOJ) who stand to gain (along with HMT) from the income received from penalty charges²³. We do not count the cost to offenders paying FPNs as a cost in the NPV as is standard from previous MOJ IAs.

Costs to Business

65. We do not expect total consumption of tobacco to alter as a result of these regulations. It is assumed that the lost opportunities to smoke in a private vehicle will be replaced by smoking at other times. We, therefore, anticipate no impacts to business. We invited readers to comment on this assumption during consultation.
66. Some responses said that they expected the regulations to add to the de-normalisation of tobacco use which may impact on consumption. Other responses also pointed to a study on the smokefree legislation which showed that smokers did not compensate for the reduction in smoking in public places by smoking more elsewhere (or at home). No quantitative evidence was made available to us which suggested consumption may increase.
67. Without direct evidence on the impacts of total consumption we retain our view at consultation stage that the effect on consumption is likely to be around smoking at different times, rather than reducing smoking. Any reductions in smoking that do occur would likely add further net benefits to the policy and would also count as an indirect cost to business in terms of lost profits from lower consumption.

Consumer surplus

68. Consumer surplus is the value a consumer places on the opportunity to consume goods or services over and above the price paid. We assume smokers unable to smoke in a vehicle when children are present will alter their consumption of tobacco to how they currently behave. This means that they will lose some of the total net present value they attach to smoking on days when they would normally smoke in their vehicle, with children present. This value is difficult to quantify, but likely to be low, because it is the location they are able to smoke in which has changed, rather than the total amount of their consumption and the time spent in a car with children will probably form a relatively small component of the average day.
69. We should also take account of the increase in consumer surplus that the child would place to being in a smoke free journey compared to a journey where tobacco is consumed by an adult (increase over and above the health benefits the children will gain from the smokefree journey). 86% of children who are exposed to SHS in cars would like the smokers to stop, but only 31% are actually able to tell their parents to stop.¹⁹ We assume that, at the very least, the benefits (or gain in consumer surplus) that children receive will cancel out the loss incurred by smokers. It is also possible, however, that the net effect will be a surplus gain. The net effect has not been quantified here and has not been included in the NPV calculation.

Loss of choice

70. We assume that the value in the ability to choose when to consume tobacco is intrinsic in the value placed by the consumer on the product in total. We, therefore, treat any losses incurred from the inability to choose to consume tobacco as already factored into the consumer surplus losses above.
71. Some consultation responses asked for more consideration to be given to the ability of adults to choose when to smoke. Whilst we recognise this as a cost due to lost consumer surplus, it is only correct to also consider the choices available to children who are present in the vehicle whilst an adult is smoking. No evidence was provided to quantify either during the consultation and so we make the assumption that the loss in consumer surplus of the smoker is offset by the gain in surplus by the child.

²³ HM Treasury also receive a proportion of income from FPNs which contributes to the Consolidated Fund.

Health Benefits

Morbidity

Children

72. Data from the 2012 SDDS shows that 26% of children aged 11-15 years old are exposed to SHS in their family cars. We reduce this by 6% to reflect the impact of the 2013 smokefree campaign (please see Annex 1 for more detail). Over 50% of these children will be exposed at least once or twice a week up to a maximum level of exposure every day. The data also shows that 30% of 11-15 year olds are exposed to SHS in someone else's car, with 23% of these children exposed at least once or twice a week.

73. Children exposed to SHS are subject to increased risks of a range of diseases. The RCP report finds an increased likelihood in the following diseases when children are exposed to SHS at home:⁷

- Lower respiratory infections (comprises bronchitis, bronchiolitis, pneumonia, and acute respiratory infection)
- Wheeze
- Asthma
- Meningitis
- Middle ear infection

74. The report estimates the number of new cases of these diseases in UK children (between varying ages) in 2008 that are attributable to SHS exposure at home. These are summarised in Table 1:

Table 1: Events of disease in children in the UK caused by SHS exposure in the home (2008)

Disease incidence	Age range in years	UK cases attributable to smoking
Lower respiratory infections	0-2	20,500
Middle ear infections	0-16	121,400
Wheeze	0-2	7,200
Asthma	3-4	1,700
Asthma	5-16	13,700
Meningitis	0-16	600
Total incident cases		165,100

75. We treat these estimates from the RCP report as our best estimate for the number of SHS-related new disease cases in children for the UK in 2008. For England we estimate the number of diseases to be approximately 139,000 based on the 2014 population ratio of UK to England.²⁴

76. Some consultation responses criticised the use of epidemiological studies as the basis for creating new legislation. Despite the limitations of such studies, the overwhelming view of the scientific community is that these studies are the best estimate available, and the studies we have chosen to base our estimates on all come from peer reviewed journals. No large scale, peer reviewed evidence was presented to us which showed that SHS has no effect on health.

77. Using the RCP report and updating some of the assumptions we can estimate the total number of cases expected to be attributed to SHS exposure for the 10 year period 2015-2024. The report

²⁴ 53.5m/63.7m (source: <http://www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/mid-2011-and-mid-2012/index.html>)

uses data from research papers from the 1970s up to 2008 (most are 2006 and prior) to determine the increased risk of disease from exposure to SHS. One of the assumptions used is a 22% exposure rate to SHS at home. The SDDS figures, however, imply a 2012 exposure estimate of 43% for 11-15 year olds in England.¹ We cannot identify how the RCP report defines SHS-exposure since it is a systematic review of a range of other studies.

78. Rather than updating the RCP report with exposure statistics from the SDDS, we have adjusted using overall smoking prevalence rates. In 2008 smoking prevalence was approximately 21%. Our ten year estimates of prevalence from 2015-2024 are taken from the Department's analysis undertaken for the Standardised Packaging IA. We also adjust for the population of children aged 0-16 years old (we only look at 0-16 year olds under health benefits despite the policy covering all under-18s because this was the age range analysed in the RCP study as seen in Table 1) between 2015-2024.²⁵ The estimated number of 0-16 year olds in England in 2008 was 10.3m.²⁶ These are taken from ONS projections.

79. Table 2 presents the 10 year profile of incident numbers.

Table 2 – Ten year profile of expected disease cases in children attributable to exposure to SHS at home in England

Year	Adult smoking prevalence (%)	Estimated 0-16 years old population	Total incident cases
2015	19.8	10,961,632	140,154
2016	19.3	11,050,973	137,939
2017	18.8	11,155,808	135,859
2018	18.7	11,277,057	136,425
2019	18.6	11,409,741	137,109
2020	18.5	11,529,702	137,620
2021	18.4	11,629,846	138,515
2022	18.4	11,717,106	139,251
2023	18.4	11,774,576	139,630
2024	18.3	11,816,358	139,820
Total			1,382,323

80. The relationship between SHS exposure at home and specifically exposure to SHS in vehicles is not clear. In an average day the time spent by children at home will presumably be greater than time spent in a vehicle. This would suggest a greater exposure to SHS at home if measured solely by time. Partially offsetting this, vehicles are more enclosed relative to a typical room in a house or flat, resulting in a greater concentration of particulate matter, known as PM2.5, in a child's surrounding space.²⁷

81. The factors that influence an individual child's exposure to SHS will depend on individual circumstances. For example, exposure in a less than perfectly ventilated vehicle is likely to be of higher intensity but of shorter duration whereas exposure in the home is likely to be of a lower intensity but a longer duration. Some people may smoke in the family home but not in the family vehicle and vice versa and some children may only be exposed to SHS when they travel in a friend's car and not in the family car.

82. From the evidence that DH was aware of at consultation stage, we were not able to assess with certainty the share of SHS-related illnesses in children caused by exposure in vehicles. For the purposes of the consultation IA we made an assumption that between 5-10% of the health impacts are attributable to exposure to SHS in vehicles and invited views during the consultation.

²⁵ Interactive Download Table Tool - National Population Projections 2012-based, ONS, <http://www.ons.gov.uk/ons/interactive/2012-npp/index.html>

²⁶ Report Summary Table, projected populations - UK and constituent countries, 2008-based, ONS, <http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2008-based-projections/sum-2008-based-national-population-projections.html>

²⁷ Sanchez-Jimenez A, Galea K et al. *Exposure of children to second-hand smoke in cars*, Journal of Environmental Health Research, 2011

83. We were not presented with further quantitative evidence around what proportion of SHS related diseases may be attributable to smoking in vehicles. Some responses said that the effects of SHS would be reduced by the opening of a window or use of air conditioning. We are not able to estimate from the data we have what proportion of exposure is in cars with no ventilation. We also do not know exactly how long a child spends in a vehicle compared to the home (where it may be expected they would also be exposed to SHS if adults smoke in the vehicle with the child present) – but that it is probably less than 10%. We are also unable to say, with certainty, how the average intensity of exposure compares across the home (and other non-vehicle places) and the average journey in a car where tobacco is smoked.
84. We have therefore used a 5% attribution rate as our central estimate so we are not overstating the benefits.

Table 3 – SHS-related incidents attributable to cars

Year	Total incident cases	Incidents attributable to SHS in cars with 5% attribution
2015	140,154	7,008
2016	137,939	6,897
2017	135,859	6,793
2018	136,425	6,821
2019	137,109	6,855
2020	137,620	6,881
2021	138,515	6,926
2022	139,251	6,963
2023	139,630	6,982
2024	139,820	6,991
Total	1,382,323	69,116

85. Taking 5% as our attribution value, we estimated the number of disease cases in 0-16 year olds due to SHS exposure in cars in England for the period 2015-2024 to be between around 69,000.
86. We assume that to achieve a similar magnitude of benefits under policy option 1, it will take a significantly longer amount of time compared to option 2. The benefits of policy option 2, therefore, will be the reductions in disease incidents. We base these estimated benefits on Table 3 but allow for a phasing in period to reflect that impacts on health are unlikely to be immediate. We assume a 2 year period of phasing in, with 2015 experiencing half the benefit and 2016 onwards the full reduction in cases. These are presented in Table 4.

Table 4 – Morbidity benefits – reduction in new disease incidents in 0-16 year olds in England under Option 2

Year	Number of fewer new incidents attributable to SHS in cars
2015	3,504
2016	6,897
2017	6,793
2018	6,821
2019	6,855
2020	6,881
2021	6,926
2022	6,963
2023	6,982
2024	6,991
Total	65,612

87. As mentioned above the estimates made in this section of the IA do not represent a definitive picture of the health burden caused by SHS exposure by children in cars, and should not be represented as such. The uncertainties that surround the figures used here are discussed further below in the “Uncertainties” section. These morbidity benefits are uncertain and a value has not been given to them in the NPV. Hence, all other things equal, the NPV can be considered an underestimate of the value of this policy.

Adults

88. Non-smoking adults currently exposed to SHS in vehicles can also expect to benefit from these regulations if they share journeys with children. The hazards of SHS to adults are outlined in the earlier sections of this IA. We can expect a reduction in the adverse health impacts on adults in proportion to the number of journeys that they will no longer be exposed to SHS.

Mortality

Adults

89. A 2005 study estimated that over 11,000 people aged 20 and above in the UK die per year as a result of SHS exposure at home.²⁸ We do not expect these new regulations to have a significant impact on adult mortality but this study does demonstrate the potential benefits for non-smoking adults who will no longer be exposed to SHS in cars, albeit at the top end.

Children

90. The methodology used to derive Table 1 is also used in the RCP report to estimate the number of cot deaths attributable to SHS exposure at home. It estimates 22% of cot deaths to be attributable to SHS. Using 2012 statistics on causes of death, there were 369 deaths to children under the age of 1 in England and Wales due to sudden infant syndrome (ICD-10 code R95). Using the RCP approach would suggest 81 of these deaths were related to SHS.

91. We are wary of including lives saved in our health benefit estimates. The extent of infant exposure to SHS in cars is more uncertain than the exposure of children 11+ years old because of lack of data. We, therefore, do not attribute any benefits in the form of prevented cot deaths from non-exposure to SHS in cars. No responses to the consultation offered any further evidence.

²⁸ Jamrozik K, *Estimate of deaths attributable to passive smoking among UK adults: database analysis: BMJ*, 2005

Avoidable treatment costs

92. The RCP report estimates the cost of treating illnesses caused by SHS exposure to children. These estimates are based on the incidents of new diseases approximated in Table 1. It estimates the cost of UK primary care visits and asthma drugs at about £9.7m, which roughly comes to £8.1m for England after adjusting for population figures.¹ This, in addition to the cost of child hospital admissions in England which is estimated at £12.2m per year, suggests a total cost saving of £20.3m per year to the NHS in England.
93. Taking these figures as our best estimate, we adopt a similar approach to morbidity benefits and adjust based on smoking prevalence rates and population size to get a more accurate estimate. We assume a 2 year phasing in period, as per the morbidity health benefits, and focus on a 10% allocation due to SHS in vehicles. This is discounted at 3.5% to arrive at the estimated present value of NHS cost saving benefits. We again assume that to achieve a similar magnitude of benefits under policy option 1, it will take a significantly longer amount of time compared to option 2. The results are shown in Table 5.

Table 5 – Discounted NHS cost savings in England due to reduction in SHS exposure in cars

Year	Discounted cost savings attributable to SHS exposure in cars (£)
2015	510,430
2016	970,750
2017	923,775
2018	896,257
2019	870,292
2020	843,996
2021	820,756
2022	797,218
2023	772,353
2024	747,251
Total	8,153,078

94. Cost effectiveness studies have estimated one Quality Adjusted Life Year (QALY) to cost the NHS about £15,000. So for approximately every £15,000 that is not spent by the NHS on smoking related conditions, one QALY is likely to be gained elsewhere.
95. DH assigns a value of £60,000 to a Quality Adjusted Life Year. This is consistent with similar valuation of policies that mitigate mortality or morbidity risk by other Government departments, based upon studies of what members of the public are on average willing to spend to reduce their own mortality risk, or to improve their own health outcomes.
96. Therefore by avoiding around £8m worth of cost, the NHS has the opportunity to generate around £32m worth of health benefits.

Ministry of Justice

97. We estimate about 2,100 FPNs to be issued every year for the new offences adjusted for population numbers and smoking prevalence rates. The estimated fines charged to smokers in the costs section above are transferred to the MOJ/HMT. This came to £860,000 discounted at 3.5% over 10 years.

Driving accidents

98. A literature review found that smoking can act as a distraction to drivers.²⁹ The review summarises its findings from the studies it looked at with the following:

- Smokers have an increased crash risk compared to non-smokers after accounting for age, gender, education, alcohol consumption and driving experience
- Smoking was a source of distraction in 0.9% of distraction-related crashes
- Smoking while driving is a hazard

99. Possible explanations behind the increased risk of accidents included the physical distraction of smoking and carbon-monoxide toxicity. A separate study found that smokers in Taiwan have higher injury rates than non-smokers even after controlling for alcohol and social class.³⁰ In light of the evidence we might expect a small reduction in the risk of car accidents following the reduction of smoking in cars. Responses to the consultation agreed with this benefit and offered further statistics around self-reported surveys that reported 45% of smokers had had an accident or near miss whilst smoking in the vehicle. This would however include all drivers, not just with children present. We therefore continue to note this benefit qualitatively, but not quantify it.

Productivity

100. Over the medium-to-long term we would expect additional benefits in the form of wider economic gains. The children who don't suffer from the illnesses in Table 1 (because of the prohibition on smoking in a private vehicle as suggested in policy option 2) will be more productive as they grow older and enter the labour force, all other things held constant. This will arise firstly from being healthier individuals and therefore being able to work at a higher intensity and, secondly, from taking fewer sickness absences.

Risks and wider issues

Offsetting tobacco consumption and unintended consequences

101. We have considered unintended consequences which may arise from the new provisions. We anticipate that there may be a change in smoking behaviour. Smokers may alter the way in which they travel (stopping for breaks more often for example) or they may consume more tobacco products while they are stopped (two cigarettes per stop instead of one for example). The new provisions may also have an impact on smoking prevalence levels, although this is not the policy intention. Some people may smoke less frequently if they are often travelling in a vehicle carrying children. Some may also smoke more in other places since they are unable to smoke in their vehicle. We do not have any data to enable us to quantify the likely impact of regulations on these behaviours.

102. We have evidence to suggest that the regulations will not displace smoking from private cars into the home, because:

- Evidence of behaviour changes following the smoke free regulations in 2007 has suggested the opposite. Rather than increasing smoking levels at home, reductions in exposure to SHS have been observed in private and in public places in the lead up to and after the smokefree legislation was introduced⁶, as awareness of the risks of SHS exposure increased. We could expect the same affect if legislation to end smoking in private cars carrying children is introduced.
- Even if home consumption was to increase, the reduction in car exposure is likely to have the greater impact on health because of the higher toxicity of SHS in enclosed spaces such as vehicles. This would suggest an overall net gain to the health of children.

²⁹ Young K et al. *Driver Distraction: A Review Of The Literature*: Monash University Accident Research Centre, 2003

³⁰ Wen CP et al. Excess injury mortality among smokers: a neglected tobacco hazard: *Tobacco Control*, 2005

Denormalisation

103. The *Tobacco Control Plan for England* sets out that:

To promote health and wellbeing, we will work to encourage communities across England to reshape social norms, so that tobacco becomes less desirable, less acceptable and less accessible. We want all communities to see a tobacco-free world as the norm and we aim to stop the perpetuation of smoking from one generation to the next. To reduce smoking uptake by young people, we all need to influence the adult world in which they grow up (p.10).

104. Over time the uptake of smoking to children may reduce as a result of these regulations. Children will be less exposed to smoking by adults, potentially helping to reshape social norms around smoking. We can expect large health benefits if this were the case for generations to come. We do not attempt to quantify this as the range of uncertainty is significant.

105. Consultation responses suggested that this benefit was underplayed in the consultation IA. Where denormalisation occurs we may expect the number of children taking up smoking (either as a child or in later life) to fall. To illustrate this benefit, for every child who does not start smoking who would otherwise have done so we would expect an average gain of 1.3 discounted life years – valued at around £78,000. We do not, however, have enough evidence to say with any confidence how many children may be affected in this way. We therefore note the benefit but do not include an estimate within the NPV.

Uncertainties

106. This section outlines the reasons why the main estimates quantified in this IA should be treated in context with respect to their ranges of uncertainty.

107. The health benefits are driven by the estimates from the RCP report. The report does not quantify the number of disease cases caused by exposure to SHS by explicitly identifying each and every case. Their approach can be summarised as follows:

- They measure overall disease incidence by analysing primary care data recorded in The Health Improvement Network (THIN) for all children born between 1988 and 2004
- The number of new diagnoses and episodes of the illnesses in Table 1 are recorded for the age ranges of study
- This data is used to estimate new disease incidence per 1,000 person years
- Applying this incidence to the 2008 population for the relevant age group provides an estimate of the number of total disease cases for children
- To find the proportion of these cases attributable to exposure to SHS, they use the following formula: $[p(OR - 1)] / [p(OR - 1) + 1]$; where p=proportion of children exposed to SHS at home, OR = odds ratio of disease if exposed to SHS at home
- Applying this formula, the number of total cases attributed to SHS exposure is presented in Table 1

108. The odds ratios used are based on a systematic review of older studies, most of which are 2006 and prior. There is a risk that the odds ratio is biased upwards. This is because the amount of exposure the average child would have been subject to in the studies pre-2007 is larger than an average child now due to the smokefree legislation. This may suggest that the number of cases attributable to SHS exposure is over estimated.

109. The RCP report does not define SHS exposure nor explain the development in time of catching the diseases. Since we do not know how exposure is defined, we have only adjusted for updated overall smoking prevalence rates which is not ideal. If possible we would adjust for SHS-exposure rates. To overcome the issues around time lag in the realisation of health benefits, we have assumed a 2 year phased impact. Both are additional elements of uncertainty.

110. The disease cases attributable to SHS exposure are estimated for only the age ranges presented in Table 1. The RCP report is constricted to these ages only because of the studies they reviewed. This creates uncertainty over the applicability of the health benefit estimates to all children between 0-16 years, and, the implication would be that the number of cases we have used is actually an under estimate.
111. The above main reasons for uncertainty contribute to the quantified cost savings as well. Since these savings are based on assumptions of disease incidence, the estimated range of savings will be of similar magnitude to the range of uncertainty around disease cases. In addition there will be uncertainty with respect to the costs used by the RCP report since the report is a few years old and may also be subject to data errors.

Wellbeing

112. Wellbeing is about feeling good and functioning well and comprises an individual's experience of their life; and a comparison of life circumstances with social norms and values.³¹ Wellbeing exists in two interrelated dimensions:
- i. Subjective wellbeing (or personal wellbeing) asks people directly how they think and feel about their own wellbeing, and includes aspects such as life satisfaction (evaluation), positive emotions (hedonic), and whether their life is meaningful (eudemonic).
 - ii. Objective wellbeing is based on assumptions about basic human needs and rights, including aspects such as adequate food, physical health, education, safety etc. Objective wellbeing can be measured through self-report (e.g. asking people whether they have a specific health condition), or through more objective measures (e.g. mortality rates and life expectancy).
113. This policy is likely to influence both subjective and objective wellbeing measures. Reduced exposure to environmental smoke is expected to result in an improvement in physical health – which is in itself a measure of objective wellbeing. In turn, physical health has been consistently associated with levels of subjective wellbeing. For example, the ONS Measuring National Wellbeing: Life in the UK 2012 report showed that people's self-reported health was positively associated with overall life satisfaction.³² This trend has also been demonstrated among children; the Health Behaviour in School-aged Children (HBSC) England survey found that self-reported health was associated with life satisfaction (93% of those who reported excellent health also reported high life satisfaction).³³
114. As assessed above, health benefits are expected to accrue to children from this policy. This is likely to have a positive impact on both objective and subjective levels of wellbeing.
115. No further evidence was presented during consultation on wellbeing.

Equality Test

116. The measure should benefit children under 18 years of age who are currently exposed to secondhand smoke in private vehicles in England. We believe that the regulations may have a bigger positive health impact on young people from communities where smoking prevalence is higher, and may help to reduce health inequalities caused by the use of tobacco.
117. In its initial assessment of the impact on equality of this measure, the Department of Health has concluded that it does not create or increase any unlawful discrimination, harassment or victimisation of any particular group by gender, race, religion, ethnicity, sexuality, sexual

³¹ Wellbeing and health policy, *Department of Health*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/277566/Narrative__January_2014_.pdf

³² Predicting wellbeing, *NatCen Social Research*, <http://www.natcen.ac.uk/media/205352/predictors-of-wellbeing.pdf>

³³ Developing Well – 11-19 years, *Department of Health*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/277574/Developing_Well_-_11_to_19_years.pdf

orientation or disability. It is a wide-ranging public health measure aimed at protecting the health of all children in England.

118. One response from the consultation suggested that the policy discriminates against people with mental health problems who use smoking as a way to reduce their anxiety and symptoms. We were not however presented with any peer reviewed evidence which suggested that tobacco was actually effective in this regard, or that other methods could not replace tobacco smoking whilst children are present in the vehicle.
119. Evidence we are aware of comes from a joint report by the Royal College of Physicians and the Royal College of Psychiatrists³⁴. It states *“people with some mental disorders may use nicotine to ameliorate symptoms such as depression or anxiety (the self-medication model). However, the symptoms of mental disorders can be confused with or exacerbated by those of nicotine withdrawal, hence resulting in false attribution of relief to effects on mental disorders. The effects of constituents of tobacco and tobacco smoke other than nicotine on mood and cognition remain unclear. The association between smoking and mental disorders is therefore complex and further work is needed to help improve understanding.”*
120. Given the lack of clear evidence and attribution between mental health and smoking as a way to reduce anxiety symptoms we conclude that this policy does not unfairly discriminate against people with mental health problems. Other sources of nicotine that do not produce SHS, such as nicotine replacement therapy medicines (patches, gums etc.) are readily available, and can be used by smokers when driving.

³⁴ https://www.rcplondon.ac.uk/sites/default/files/smoking_and_mental_health_-_key_recommendations.pdf

Annex 1: Estimated number of children exposed to SHS in cars and number of car journeys with children exposed to SHS

121. The "Smoking, drinking and drug use among young people in England in 2012" survey (SDDS) is the latest in a series designed to monitor smoking, drinking and drug use among secondary school pupils aged 11 to 15. Information was obtained from 7,589 pupils in 254 schools throughout England in the autumn term of 2012. The 2012 SDDS results for smoking in cars can be seen in Table 1A.

Table 1A - Frequency of exposure to secondhand smoke in the last year, by smoking status 2012

<i>All pupils</i>		<i>2012</i>			
Frequency of exposure to secondhand smoke	Smoking status				
	Regular smoker %	Occasional smoker %	Non-smoker %	Total ^a %	
In family's car					
Every day or most days	23	9	5	6	
Once or twice a week	19	13	8	8	
Once or twice a month	11	10	5	5	
Less often than once a month	8	9	7	7	
Never in the past year	40	59	76	74	
In someone else's car					
Every day or most days	17	4	2	2	
Once or twice a week	21	9	4	5	
Once or twice a month	22	18	6	7	
Less often than once a month	16	28	15	16	
Never in the past year	24	42	73	70	
<i>Unweighted bases^{b,c}</i>	<i>275</i>	<i>255</i>	<i>5746</i>	<i>6304</i>	
<i>Weighted bases^{b,c}</i>	<i>269</i>	<i>256</i>	<i>5768</i>	<i>6320</i>	

122. Before using this data to estimate the number of children exposed to SHS in cars, we make a slight adjustment for the impact of the smokefree campaigns. Analysis of the 2013 campaign¹⁸ and evidence supplied from PHE indicate an increase in the number of households banning smoking in the car of approximately 6%. We reduce the values in Table 1A by 6% to reflect this impact.

123. We assume the exposure rates reported are applicable to all children in England. Population projections estimate the number of 11-15 year olds in England in 2015 to be just under 3m. This is taken from the Office of National Statistics (ONS). Multiplying the percentage of children exposed to SHS by 3m gives the total expected number of children to be exposed to SHS per exposure unit. We define "exposure unit" as the different levels of frequency of exposure to SHS described in Table 1A (i.e. "Every day or most days", "Once or twice a week", "Once or twice a month" etc). For example:

- Percentage of children exposed every day or most days in the family car = 5%-6%
- Estimated number of 11-15 year olds in England in 2015 = approximately 3m
- Expected number of 11-15 year olds exposed to SHS every day or most days in the family car = 5%-6% x 3m = approximately **165,000**

124. Taking the definition of "**Frequency of exposure to secondhand smoke**" from Table 1A, we assume the following monthly exposure rates in Table 1B. We assume a 30.5 day month in our calculations:

Table 1B – Frequency of exposure to SHS in terms of days³⁵

Frequency of exposure to SHS	Assumed days per month exposed
Every day or most days	21.8
Once or twice a week	6.5
Once or twice a month	1.5
Less often than once a month	0.5
Never in the past year	0

125. According to the 2012 National Travel Survey³⁶ there are on average 954 trips per person per year in Great Britain (The basic unit of travel in the National Travel Survey is a trip, defined as a one-way course of travel with a single main purpose). 42% of these trips are made by car or van as a driver (a further 22% as a passenger). This would indicate 611 average car trips per person per year (64%), but 401 of these are separate car journeys (42%) since there will be overlap with passengers.

126. The number of car journeys in which an 11-15 year old is exposed to SHS per day per exposure unit as defined in the SDDS (e.g. an exposure unit could be “Every day or most days”, or, “Once or twice a week”) is estimated as 1.1. This is the number of separate car journeys (401) on average per year per person divided by the number of days in a year (365).

127. The estimated number of car journeys in which an 11-15 year old is exposed to SHS per month is calculated as follows:

- Number of 11-15 year olds exposed to SHS (exposure unit) * Assumed number of days per month exposed (per exposure unit) * Assumed number of SHS-exposed car journeys per day (per exposure unit)

128. For example, the number of car journeys with a 11-15 year old exposed to SHS “*Every day or most days*” in the family car per month is:

- 165,000 children * 21.8 days/month exposed * 1.1 car journeys per day = approximately 3.9m car journeys per month

129. This methodology is applied to all exposure units and for those exposed in someone else’s car. Aggregating the numbers gives an estimate of 9.4m car journeys per month across England in which an 11-15 year old will be exposed to SHS. Multiplying by 12 gives an annual estimate of 112m car journeys.

130. We assume that the exposure rates from the SDDS are applicable to children aged 0-10 and 16-17 years old (relevant population estimated as 8.6m for 2015). We exclude the figures for 0-10 year olds under “Regular smokers” since we expect this cohort to be very small. Otherwise using the same approach as 11-15 year olds to all other relevant children the total number of SHS-exposed car journeys is about 432m.

131. This represents approximately 2% of all estimated annual car journeys. We estimate the total number of car journeys at just under 22bn. This is calculated by multiplying the average number of trips made per person per year as a driver (401) by the projected 2015 population for England (54.5m).³⁷ Tables 1C-1F summarise the main estimated statistics.

³⁵ Days calculated as follows: 21.8 = 5 days per week, 6.5 = 1.5 days per week, 1.5 = 1.5 days per month, 0.5 = 0.5 days per month

³⁶ National Travel Survey 2012, <https://www.gov.uk/government/publications/national-travel-survey-2012>

³⁷ Greener Journeys estimated 24bn car journeys in total using the 2009 National Travel Survey (<http://www.greenerjourneys.com/wp-content/uploads/2012/06/1nb.pdf>)

Table 1C – Estimated number of 11-15 year olds exposed to SHS in cars in England, 2015 (family car or someone else’s car)

Frequency of exposure to SHS	No of regular smokers exposed	No of occasional smokers exposed	No of non-smokers exposed	Total
Every day or most days	47,246	14,613	177,287	239,146
Once or twice a week	47,246	24,730	303,921	375,897
Once or twice a month	38,978	31,474	278,594	349,046
Less often than once a month	28,348	41,591	557,188	627,126
Never in the past year	89,819	127,069	4,078,705	4,295,593
Total	251,637	239,476	5,395,696	5,886,809

Summary: Approximately 1.6m 11-15 year olds are estimated as being exposed to SHS in cars in England (ranging from less often than once a month to every day).

Table 1D – Estimated number of 0-10 and 16-17 year olds exposed to SHS in cars in England, 2015 (family car or someone else’s car)

Frequency of exposure to SHS	No of regular smokers exposed	No of occasional smokers exposed	No of non-smokers exposed	Total
Every day or most days	20,189	42,724	518,334	581,247
Once or twice a week	20,189	72,302	888,573	981,063
Once or twice a month	16,656	92,020	814,525	923,201
Less often than once a month	12,113	121,598	1,629,050	1,762,762
Never in the past year	38,381	371,511	11,924,902	12,334,794
Total	107,528	700,156	15,775,383	16,583,067

Summary: Applying the 11-15 year old exposure rates there are approximately 4.2m 0-10 and 16-17 year olds are estimated as being exposed to SHS in cars in England (ranging from less often than once a month to every day)

Table 1E – Estimated total number of car journeys in England in which 11-15 year olds are exposed to SHS, 2015

Frequency of exposure to SHS	No of car journeys with 11-15 year old exposed to SHS per month	No of car journeys with 11-15 year old exposed to SHS per year
Every day or most days	5,719,263	68,631,159
Once or twice a week	2,696,908	32,362,898
Once or twice a month	574,750	6,896,999
Less often than once a month	344,215	4,130,581
Never in the past year	-	-
Total	9,335,136	112,021,638

Summary: Approximately 112m car journeys per year expose an 11-15 year old to SHS in England (ranging from less often than once a month to every day)

Table 1F – Estimated total number of car journeys in England in which 0-10 and 16-17 year olds are exposed to SHS, 2015

Frequency of exposure to SHS	No of car journeys with 0-10 and 16-17 year olds exposed to SHS per month	No of car journeys with 0-10 and 16-17 year olds exposed to SHS per year
Every day or most days	13,900,714	166,808,563
Once or twice a week	7,038,739	84,464,872
Once or twice a month	1,520,171	18,242,051
Less often than once a month	967,539	11,610,465
Never in the past year	-	-
Total	23,427,163	281,125,951

Summary: Approximately 281m car journeys per year expose a 0-10 or 16-17 year old to SHS in England (ranging from less often than once a month to every day). When Table 1E are added, there are 393m estimated journeys exposing an under-18 to SHS in the car.

Annex 2 – Estimated number of Fixed Penalty Notices to be issued

1. Annex 1 estimates the total number of car journeys of under-18 year olds exposed to SHS at about 393m per year and the total number of car journeys in England per year at about 22bn.
2. Following the ban we assume a compliance rate of 95%. This is based on the following evidence:
 - General attitudes appear growing in favour of these measures with 78% supporting a ban on smoking in cars with children in 2011 (62% of smokers in support).³⁸ The support for smokefree legislation rose from 51% in May 2004 to 80% in March 2010.³⁹ It would not be unexpected for a similar growth in support to be shared for the ban on smoking in cars with children.
 - The proportion of car drivers wearing seat belts is 95%⁴⁰
 - The compliance rate of smoke free work vehicles is estimated at 98%¹⁷
3. A 95% compliance rate implies approximately 22m journeys still exposing children to SHS per year.
4. It is estimated that about 0.016% of these journeys will be subject to FPN issues. This is based on the following:

Seat belt example

- 5% of drivers are observed not to wear seatbelts⁴⁰ * 22bn estimated total car journeys across England per year = 1bn car journeys with no seat belt worn
- Number of FPNs issued in 2012 for seat belt offences in 2012 = 116,727⁴¹
- 116,727 is 0.01% of 1bn

Mobile phone example

- Approximately 2% of drivers use their mobile phone whilst driving⁴² * 22bn estimated total car journeys across England per year = 440m car journeys with mobile phone usage
- Number of FPNs issued in 2012 for mobile phone offences in 2012 = 92,665
- 92,665 is 0.02% of 440m

5. This leaves an initial estimate of about 3,100 FPNs issued per year. We adjust slightly to allow for cases where more than one FPN will be issued per car journey. This will occur when passenger are found to be smoking in the car. The passenger will be issued with an FPN for smoking in the presence of a child but the driver will also be issued with an FPN for failing to prevent the passenger from smoking. We do not have data on the likelihood of these events so we assume in 10% of cases 2 FPNs will be issued. Our total FPN estimate increases to 3,500. The following estimates of other offences in England and Wales in 2012 puts this estimate in context:

- Careless driving offences (excl. use of handheld mobile phone while driving) = 3,700 FPNs
- Use of handheld mobile phone while driving = 92,700 FPNs
- Seat belt offences = 116,700 FPNs
- Miscellaneous motoring offences (excluding seat belt offences) = 800
- Individuals smoking in a smokefree area (including work vehicles) = 2,268 cumulatively between 2007-2010 (approximately 756 per year)¹⁷

³⁸ YouGov/ASH survey results 2011, http://d25d2506sfb94s.cloudfront.net/cumulus_uploads/document/7esbdcg26g/YouGov-Survey-ASH-smoking-in-cars-children-110316.pdf

³⁹ Smokefree Legislation – ASH Factsheet, http://www.ash.org.uk/files/documents/ASH_119.pdf

⁴⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/8900/seat-belt-rates.pdf

⁴¹ https://www.google.co.uk/url?q=https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/299471/ppp-fixed-penalty-notice-1213-tabs.ods&sa=U&ei=2kFzU5PeFcSw7AbrYHYAg&ved=0CCgQFjAC&usq=AFOjCNFUjfnKFNfME80r0tGvrCWKlf5hRw

⁴² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/8901/mobile-use-drivers.pdf

6. Lastly, we take an average of our 3,500 estimate and the 756 per year issued for smoking in a smokefree area (last bullet point above). Our final estimate is around 2,100 FPNs to be issued.

Annex 3 - Proposed provisions in the draft Smoke-free (Private Vehicles) Regulations 2014

- The Children and Families Act provides the Secretary of State and Welsh Ministers with the powers to make regulations to provide for an enclosed private vehicle to be smokefree when a person under the age of 18 is present.
- The regulations would extend smokefree legislation in the Health Act 2006 to make it an offence to smoke in a private vehicle and an offence for a driver not to stop someone smoking, when someone under the age of 18 is present. Anyone who smokes in a smokefree private vehicle would be guilty of an offence, regardless of their age.
- The offence of failing to prevent smoking falls on the driver of the car in all instances.
- Offences relate to 'enclosed vehicles' on the public highway:
 - Enclosed means enclosed wholly or partly by a roof and by any door or window that may be opened, it does not include, for instance, a convertible car with the roof completely down
 - On the public highway would include a vehicle stopped in a car park or grass verge. It is intended to cover a motor caravan when being used as a vehicle but not when it is being used as a home
- Ships, hovercraft and aircraft are exempt, as they are from the current smokefree legislation, and they are covered by separate legislation such as maritime laws.
- The offences are summary only and therefore the penalties for both offences are:
 - a fixed penalty notice of £50
 - a fine on conviction if the case goes to court
- Enforcement will largely be carried out by the police as only they have the power to stop moving vehicles but environmental health officers may also be involved as they enforce current smokefree legislation. The police may stop a car if they suspect an offence is being committed or as part of a planned operation targeting a particular issue such as the use of seatbelts.

Annex 4 – Justice system costs assumptions and limitations

1. Both offences are summary only, triable only in the magistrates. They are both subject to a maximum penalty of a fine.
2. As the offences are summary only, all cases will progress through the Magistrates Court. There are no associated prison or probation costs for the new offences as the maximum penalty is a fine.
3. We estimate that a prosecution for either of these new offences could cost the Criminal Justice System (CJS) approximately £500 per defendant (cost to the Crown Prosecution Service per defendant approximately £200 and costs to Her Majesty’s Courts and Tribunals Service approximately £300 per defendant– figures provided by the MOJ).
4. We estimate there will be no impact on Legal Aid.

Assumption	Risks/Limitations
<p>Crown Prosecution Service (CPS) costs:</p> <p>Current CPS costs are based on Activity Based Costings (ABC), the primary purpose of which is resource distribution.</p> <p>Source: CPS 2013</p>	<ul style="list-style-type: none"> • The key limitation of the ABC model is that it is built purely on staff time and excludes accommodation and other ancillary costs (e.g. those associated with complex cases and witness care). It also relies on several assumptions. This could mean there is a risk that costs are underestimated. • For further information about how CPS ABC costs are calculated please see the following CPS guidance (CPS, 2012): http://www.cps.gov.uk/publications/finance/abc_guide.pdf.
<p>Her Majesty’s Courts and Tribunals Service (HMCTS) costs:</p> <p>Magistrates Courts Costs</p> <p>To generate the costs by offence categories, HMCTS timings data for each offence group were applied to court costs per sitting day. Magistrate’s court costs are £1,200 per sitting day in 2012/13 prices. A sitting day is assumed to be 5 hours.</p> <p>Source: The HMCTS costs are based on average judicial and staff costs, found at HMCTS Annual Report and Accounts 2012-13. HMCTS timings data from the Activity based costing (ABC) model, the Timeliness Analysis Report (TAR) data set and the costing process.</p>	<p>Timings data for offence categories:</p> <ul style="list-style-type: none"> • The timings data are based on the time that a legal advisor is present in court. This is used as a proxy for court time. Please note that, there may be a difference in average hearing times as there is no timing available e.g. when a DJ(MC) sits. • Timings do not take into account associated admin time related with having a case in court. This could mean that costings are an underestimate. There is some information available on admin time, however we have excluded it for simplicity. • The timings are collection of data from February 2009. Any difference in these timings could influence costings. • The data also excludes any adjournments (although the ABC model does), and is based on a case going through either one guilty plea trial (no trial) or one effective trial. However a combination of cracked, ineffective and effective trials could occur in the case route. As a result the costings could ultimately be underestimated.

Assumption	Risks/Limitations
	<ul style="list-style-type: none"> • Guilty plea proportions at the Initial hearing from Q2 in 2012 are used, based on the Time Analysis Report. As these can fluctuate, any changes in these proportions could influence court calculations (effective trials take longer in court than no trials (trials where there was a guilty plea at the initial hearing). <p>HMCTS average costs per sitting day:</p> <ul style="list-style-type: none"> • HMCTS court costs used may be an underestimate as they include only judicial and staff costs. Other key costs which inevitably impact on the cost of additional cases in the courts have not been considered; for example juror costs.
<p>Legal Aid costs: We assume an eligibility rate of 0%, and estimate no impact on Legal Aid, confirmed with MoJ analysts.</p> <p>We assume this because both offences are subject to a maximum penalty of a fine. In cases where custodial sentences aren't available, it is unlikely that defendants will pass the interests of justice test to qualify for Legal Aid.</p> <p>Source: MoJ Internal Analysis 2014, agreed with the Legal Aid Agency.</p>	<ul style="list-style-type: none"> • There is a risk if some defendants were eligible for Legal Aid, that there would be some downstream costs on the Legal Aid Agency.